Paideia Seminar Prep

**We will be doing a Paideia Seminar on the following data on MONDAY, NOVEMBER 2. Please follow all the instructions that follow the data.**

The data summarizes a study of men in 25 occupational groups in England. Two indices are presented for each occupational group. The smoking index is the ratio of the average number of cigarettes smoked per day by men in the particular occupational group to the average number of cigarettes smoked per day by all men. The mortality index is the ratio of the rate of deaths from lung cancer among men in the particular occupational group to the rate of deaths from lung cancer among all men.

**Number of cases:** 25

**Variable Names:**

1. Occupational Group: Occupational Group
2. Smoking: Smoking index (100 = average)
3. Mortality: Lung cancer mortality index (100 = average)

**The Data:**

|  |  |  |
| --- | --- | --- |
| Occupational Group | Smoking Index | Mortality |
| Professionals, technical workers, and artists | 66 | 51 |
| Administrators and managers | 76 | 60 |
| Farmers, foresters, and fisherman | 77 | 84 |
| Clerical workers | 87 | 79 |
| Leather workers | 88 | 104 |
| Clothing workers | 91 | 104 |
| Sales workers | 91 | 85 |
| Woodworkers | 93 | 113 |
| Glass and ceramics makers | 94 | 128 |
| Service, sport, and recreation workers | 100 | 120 |
| Electrical and electronics workers | 102 | 101 |
| Textile workers | 102 | 88 |
| Food, drink, and tobacco workers | 104 | 129 |
| Warehousemen, storekeepers, packers, and bottlers | 105 | 115 |
| Paper and printing workers | 107 | 86 |
| Painters and decorators | 110 | 139 |
| Engineering and allied trades | 111 | 118 |
| Makers of other products | 112 | 96 |
| Construction workers | 113 | 144 |
| Transport and communications workers | 115 | 128 |
| Furnace, forge, foundry, and rolling mill workers | 116 | 155 |
| Gas, coke and chemical makers | 117 | 123 |
| Drivers of stationary engines, cranes, etc. | 125 | 113 |
| Laborers not included elsewhere | 133 | 146 |
| Miners and quarrymen | 137 | 116 |

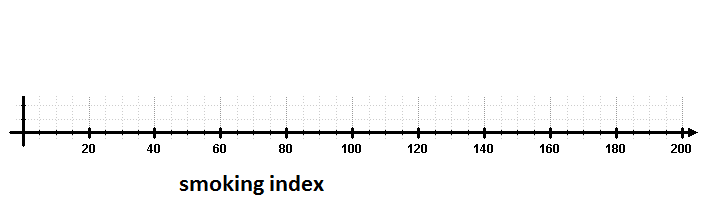
The **Smoking Index** is the number of cigarettes smoked per day by men in each occupation relative to the number smoked by all men in all occupations. The smoking index is 100 if men in an occupation are exactly average in their smoking, below 100 if they smoke less than average and above 100 if they smoke more than average.

The **Mortality** is a standardized mortality ratio for deaths from lung cancer measured relative to the entire population of men of the same ages as those studied. If the mortality index is greater or less than 100 when there are more or fewer deaths from lung cancer than would be expected based on the experience of all English men.

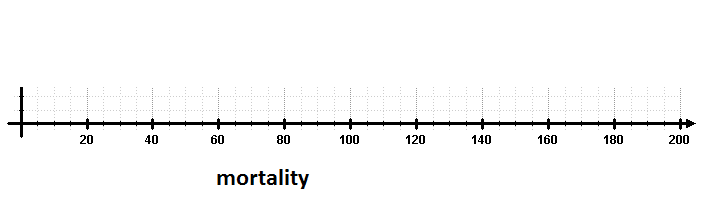
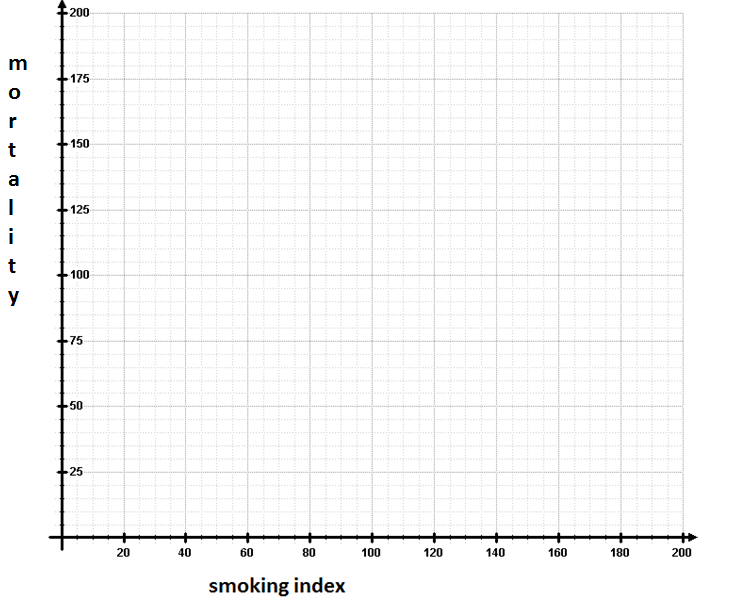
1. Did any of the data surprise you? Why or why not?
2. What questions do you have about this data? If none, why not?
3. This study was conducted in the 1970's. Do you think the results would be different if it were conducted today?
4. Why do you think the researchers focused on men?
5. Why do you think the researchers used occupational groups as categories in this study?

Make a box plot for the smoking index and one for mortality.

**Smoking Index**

1. Minimum=
2. 1st Quartile=
3. Median=
4. 3rd Quartile=
5. Maximum=
6. 

**Mortality**

1. Minimum=
2. 1st Quartile=
3. Median=
4. 3rd Quartile=
5. Maximum=
6. 
7. What do you notice about the two box and whisker plots? Any surprises?
8. Make a scatterplot for smoking index versus morality on the graph below.
9. Would you say there is a linear correlation between the smoking index and mortality?
10. Do you have any different questions now that you create the box plots and the scatterplot?
11. What additional research could you do to better understand this data?

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|  | Occupational Cancer (http://www.cdc.gov/niosh/topics/cancer/) |
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| --- | --- | --- | --- |
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| Based on well-documented associations between occupational exposures and cancer, it is estimated that approximately 20,000 cancer deaths and 40,000 new cases of cancer each year in the U.S. are attributable to occupation.  Millions of U.S. workers are exposed to substances that have tested as carcinogens in animal studies. However, less than 2% of chemicals in commerce have been tested for carcinogenicity.  Cancer is a group of different diseases that have the same feature, the uncontrolled growth and spread of abnormal cells. Each different type of cancer may have its own set of causes. Many factors play a role in the development of cancer. The importance of these factors is different for different types of cancer. A person's risk of developing a particular cancer is influenced by a combination of factors that interact in ways that are not fully understood. Some of the factors include:   * Personal characteristics such as age, sex, and race * Family history of cancer * Diet and personal habits such as cigarette smoking and alcohol consumption * The presence of certain medical conditions * Exposure to cancer-causing agents in the environment * Exposure to cancer-causing agents in the workplace   In many cases, these factors may act together or in sequence to cause cancer. Cancer Clusters Scenario Three members of the staff of an elementary school were diagnosed with cancer in 1997 and 1998; one person each with brain, liver, and ovarian cancer. Since 1998, four cases of breast cancer also were diagnosed. Increased concern among employees regarding the potential association between the workplace and the cancers prompted a request for an investigation.  The information below addresses cancer clusters in general and shows how this type of information would be used to respond to this scenario.  Cancers often appear to occur in clusters, which scientists define as an unusual concentration of cancer cases in a defined area or time. A cluster also occurs when the cancers are found among workers of a different age or sex group than is usual. The cases of cancer may have a common cause or may be the coincidental occurrence of unrelated causes. Although the occurrence of a disease may be random, the distribution of that disease may not be uniform, and clusters of disease may arise by chance alone. When cancer in a workplace is described, it is important to determine the primary site of the cancer. What do we look for when evaluating a cancer cluster?  1. Because cancer is a common disease, cancer can be found among people at any workplace. In the United States, one in two men and one in three women will develop cancer over the course of their lifetime. These figures show the unfortunate reality that cancer occurs more often than many people realize. Disease or tumor rates are very variable in small populations and rarely match the overall rate for a larger area, such as the state, so that for any given time period some populations have rates above the overall rate and others have rates below the overall rate. So, even when there is an excess, this may be completely consistent with the expected random variability.   In the scenario above, 95 staff members had worked at the school since it opened in 1992. Breast cancer is the most common type of cancer in women, affecting an estimated one of every eight women. Because the school's workforce was primarily composed of women, it was not unusual to see several cases of breast cancer. Although these breast cancers were diagnosed within a relatively short time frame, this made sense given the age of the staff and the age distribution for breast cancer.   1. Cancer clusters thought to be related to a workplace exposure usually consist of the same types of cancer. When several cases of the same type of cancer occur and that type is not common in the general population, it is more likely that an occupational exposure is involved. When the cluster consists of multiple types of cancer, without one type predominating, an occupational cause of the cluster is less likely.   In our example, four types of cancer were diagnosed among the elementary school staff.   1. When a known or suspected cancer-causing agent is present and the types of cancer occurring have been linked with these exposures in other settings, we are more likely to make the connection between cancer and a workplace exposure. We also look to see whether cancer is occurring among employees in particular jobs or areas of the workplace. This can help to identify exposures.   School environments do not typically contain significant hazardous exposures. Asbestos can be a concern in older buildings, but while it is known to cause lung cancer and mesothelioma, it is not known to cause the types of cancer reported among this group of employees.   1. The time between first exposure to a cancer-causing agent and clinical recognition of the disease is called the latency period. Latency periods vary by cancer type, but usually are 15 to 20 years, or longer. Because of this, past exposures are more relevant than current exposures as potential causes of cancers occurring in workers today. Often, these exposures are hard to document.   The average time from first employment in the school to the diagnosis of cancer among staff members in the elementary school in our example was 5.7 years. Conclusions for the scenario above The distribution of types of cancer did not appear unusual given the age and gender of the employees. No known biologically significant exposures were identified. The building only became occupied in 1992, therefore, given what we know about latency periods, none of the cancer cases met the latency criterion. Given this information, it was concluded that the cancers reported among these workers were unlikely to be the result of employment at the elementary school.  This scenario illustrates the key questions that are answered in response to cancer cluster inquiries. Historical experience at NIOSH has shown that most reports of cancer clusters indicate the coincidental occurrence of cancer in workforce members. In most situations, particularly in non-industrial work environments, it is not possible to link the cancers to exposures at work. |

1. Do you have any additional questions after reading about occupational cancer?
2. What relationships have been drawn in the US between occupations and cancer?
3. Did anything in this article surprise you? Why or why not?

**Seminar Rules*:***

1. Reading the selected text is essential in participation.
2. Listen by looking at the speaker, perhaps taking notes, and not talking while another is talking.
3. Speak loud enough for everyone to hear, asking questions as well as making statements, while looking at others.
4. Think deeply about the ideas and values expressed in the dialogue, examining the various perspectives with an open mind.
5. Refer to the text by citing specific page and line numbers and quoting actual passages to support a point of view.
6. Address others respectfully by using others’ names agreeing/disagreeing constructively, and making connections to others’ comments.

**Starting phrases to use in reference to another’s comment or participant:**

“I want to build on . . .”

“I want to connect my thoughts to . . .”

“I agree with . . .”

“I disagree with . . .”

“I have a question about . . .”

“I’ve changed my mind about \_\_\_ based on what \_\_\_ said or what was stated in the text.

“Based on the time that this was written . . .”

“Based on the audience for whom this was written . . .”

“I think the speaker was trying to say. . .”

**Paideia Participation Goals**

To speak at least three times

To look at the speaker

To ask at least two questions

To refer to the text at least twice

To speak out of uncertainty

**Grading Rubric**

Thorough Completion of Paideia Prep /25

Seminar participation (self-evaluation and teacher evaluation) /25

TOTAL /50